

NON-PUBLIC?: N  
ACCESSION #: 9203310183  
LICENSEE EVENT REPORT (LER)

FACILITY NAME: South Texas, Unit 2 PAGE: 1 OF 4

DOCKET NUMBER: 05000499

TITLE: Manual Reactor Trip on February 24, 1992  
EVENT DATE: 02/24/92 LER #: 92-003-00 REPORT DATE: 03/24/92

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR  
SECTION:  
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:  
NAME: Charles Ayala - Supervising TELEPHONE: (512) 972-8628  
Licensing Engineer

COMPONENT FAILURE DESCRIPTION:  
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:  
REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT:

On February 24, 1992 at 1515 hours, Unit 2 was in Mode 1 at 1004 power. Feedwater flow oscillations were observed on the Steam Generator Feedwater Pump - Turbine Driven (SGFPT) #23. At 1703 hours, the linear variable differential transformer for the high pressure governor valve for SGFPT #22 failed low and the turbine subsequently tripped on overspeed. At 1810 hours, SGFPT #21 was observed to have decreasing speed. The SGFPT #21 was placed in manual and given a 100% demand signal but the speed continued to decrease. Subsequently, manual turbine load reduction began and control rods were placed in automatic. At 1811 hours, the reactor was manually tripped with steam generator water levels at 47% (narrow range) and decreasing. The cause of this event was rain water leaking through expansion joints in the Turbine Generator Building (TGB) roof and into the Electrohydraulic Control (EHC) cabinet, which is the common control for all three SGFP's. The EH electronic control system was dried out and SGFPT #21 and #22 controls were recalibrated.

Belzona Flexible Membrane was applied to the leaking expansion joints on the roof of the TGB. Modifications will be implemented to seal the TGB roofs of both units.

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END OF ABSTRACT

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#### DESCRIPTION OF EVENT:

On February 24, 1992 at 1515 hours, Unit 2 was in Mode 1 at 100% power. Feedwater flow oscillations were observed on Steam Generator Feedwater Pump Turbine (SGFPT) #23. The speed controller was placed in manual. A Feedwater Booster Pump (FWBP) was started in anticipation of feedwater flow problems. At 1606, SGFPT #23 was placed in auto to observe how SGFPT #23 would respond. The controller was put back into manual after problems were still experienced. At 1702 hours, with the controller in manual, SGFPT #23 speed increased to 5500 rpm then returned to 5000 rpm.

At 1703 hours, the linear variable differential transformer (LVDT) for the high pressure governor valve for SGFPT #22 failed low as evidenced by the valve position indicator. Subsequently, SGFPT 122 turbine tripped on overspeed and the Startup SGFP started automatically. At 1755 and after the Reactor Plant Operator noted no unusual problems with SGFPT #22, the turbine was relatched and manually tripped to observe its operation. The turbine was relatched and rolled up to 3100 rpm when at 1802, it was concluded that the low pressure governor valve position indication had failed. At this point SGFPT #22 roll up was stopped.

At 1810 hours, SGFPT #21 was observed to have decreasing speed. The SGFPT #21 was placed in manual and given a 100% demand signal but the speed continued to decrease. Subsequently, manual turbine load reduction began and control rods were placed in automatic. At 1811 hours, the reactor was manually tripped with steam generator levels at 47% (narrow range) and decreasing.

#### CAUSE OF EVENT:

The cause of this event was rain water leaking through expansion joints in the TGB roof and into the EHC control cabinet which is the common control for all three SGFP's.

The expansion joints were originally sealed with a precompressed, expandable joint seal and then top coated with a sealing component. The

expandable joint seal did not adhere to the concrete sides of the roof of the TGB and eventually fell out. The exact cause for this is unknown but the exposure to atmospheric conditions as well as possible exposure to EHC fluid may be contributing factors. The force of the rain, from recent thunderstorms, impacting against the deteriorating seal may have caused the seal to slowly crack away allowing large quantities of rainwater to enter the TGB.

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#### ANALYSIS OF EVENT:

After the reactor was manually tripped, the expected actuations of Auxiliary Feedwater and Main Feedwater Isolation occurred. All safety systems functioned as expected. The water in the cabinet did not cause any physical damage to the cabinet components. The water only affected the outputs of the control circuitry. This event is reportable pursuant to 10CFR50.73 (a) (2) (iv), which requires reporting events which result in actuation of the Reactor Protection System.

#### CORRECTIVE ACTIONS:

1. The EH electronic control system was dried out and SGFPT #21 and #22 controls were recalibrated. The control circuitry for SGFPT #21 required only minor adjustments while the #22 low and high pressure governor valves open and close voltages were more significantly out of tolerance. The control circuitry was adjusted per the vendor manual and left in tolerance. The SGFPT #23 was not calibrated, since no physical damage was found with the control circuits of SGFPT #21 or #22.
2. As a temporary measure, Belzona Flexible Membrane was applied to the leaking expansion joints on the roof of the TGB. Similar repairs were implemented to the roof in Unit 1. In addition, the roof of the EHC control cabinet room and the cable entering the room were sealed.
3. For the permanent fix, plant modifications will be implemented to provide watertight seals at the crane rail trenches, isolation gap between the turbine pedestal and the roof deck, isolation gap between the steam generator feedpump pedestal and the roof deck, and at all the checkered plate hatches on the roof deck. The modifications also provide for the replacement of the seals and repair of insulation flashing where the crossover lines interface

with the low pressure stages of the turbine and provide an optional sealant system for use on the covers for the Turbine Generator and Exciter. The Unit 1 modification has been partially implemented with the installation of the watertight seal around the turbine pedestal. The Unit 1 and Unit 2 modification will be fully implemented by August 14, 1992 and October 29, 1992, respectively.

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ADDITIONAL INFORMATION:

One previous event regarding a reactor trip due to excessive rain water was reported on Unit 1, LER 90-005. This event was the result of the grounding of Feedwater booster pump located on the exterior of the Turbine Generator Building structure.

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ATTACHMENT 1 TO 9203310183 PAGE 1 OF 2

The Light  
company South Texas Project Electric Generating Station  
Houston Lighting & Power P.O.Box 289  
Wadsworth, Texas 77483

March 24, 1992

ST-HL-AE-4040  
File No.: G26  
10CFR50.73

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555

South Texas Project  
Unit 2  
Docket No. STN 50-499  
Licensee Event Report 92-003  
Regarding a Manual Reactor Trip on February 24, 1992

Pursuant to 10CFR50.73, Houston Lighting and Power (HL&P) submits the attached Licensee Event Report (LER 92-003) regarding a manual reactor trip on February 24, 1992. This event did not have adverse

impact on the health and safety of the public.

If you should have any questions on this matter, please contact Mr. C. A. Ayala at (512) 972-8628 or me at (512) 972-7205.

William J. Jump  
Manager,  
Nuclear Licensing

JMP/amp

Attachment: LER 92-003 (South Texas, Unit 2)

A Subsidiary of Houston Industries Incorporated

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Houston Lighting & Power Company ST-HL-AE-4040  
South Texas Project Electric Generating Station File No.: G26  
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cc:

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Revised 10/11/91

L4/NRC/

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